

REMARKS/ARGUMENTS

Rejection of claims 1-9 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

5 Claims 1-9 are amended to overcome the above rejection. Specifically, the description of “a single die” is amended to “a die” in the amended claims. It is argued that a person skilled in the art would easily know that the “sample” referred to in the specification of the present invention would definitely include a “single die” as a sample. It is also argued that even people who carry small amount of knowledge
10 about semiconductor wafer fabrication would know that “sample” on a wafer could be well interpreted as a “single die” or a plurality of “dies”.

Paragraph [0010] of the present invention with teachings such as “small defects”, “sampling 110”, “samples”, and “wafers” would add further weight to the above
15 arguments. In light of the above, applicant asserts that inherent and implicit description / support as interpreted by a person of ordinary skill in the art (according to MEPE 2163) would easily allow the use of “die” in lieu of “sample” in the claims.

Applicant asserts that the amended claims now contain subject matter which was
20 described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention.

25 **Rejection of claims 1, 2, and 6-9 under 35 U.S.C. 103(a) as being unpatentable over Nozoe et al. (US 6,777,677B2) in view of Keown et al (US 5,286,656).**

Claim 1 is amended to overcome the above rejection. Specifically, claim 1 is amended to incorporate the limitation that after a die having a plurality of defects is
30 processed through a plurality of semiconductor processes, the defects are divided into

three defect types according to their sizes and locations, and three methods are used thereafter to perform a chemical state analysis with respect to each of the defect types.

5 In contrast to the claimed invention, the combination of Nozoe et al and Keown et al clearly fails to state a step of conducting three methods to perform the chemical state analysis corresponding to each defect type.

Applicant asserts that the three methods disclosed in the amended claim 1 are performed corresponding specifically to each defect type, and not pertaining to
10 various embodiments of the present invention. In other words, the exact choice for using the method as described in Figs. 2, 3, and 5 is based upon the exact defect type, and not to be misinterpreted as merely for only a possible example embodiment.

As defined in paragraph [0026] of the original disclosure, the mapping analysis
15 of the present invention involves first forming the defects into a defect pattern and then comparing the defect pattern with a predetermined pattern obtained from a previous semiconductor process. Inspection of Fig. 4 of the present invention further reveals a schematic diagram of a chemical state distribution according to a result of the mapping analysis 240.

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Nozoe et al in Col. 18, lines 40-51 and in Figs. 7A and 7B teach a "review sequence" type of analysis, which is different from the "mapping analysis" stated in claim 1 of the present invention. Moreover, the passage in Col. 12, lines 31-51 cited by the Examiner pertains to the alignment procedure found in Fig. 4, and is not
25 equivalent to a "mapping analysis" of the present invention. Applicant asserts that there is no explicit teaching of the claimed "mapping analysis"

Despite the wafer testing method taught by Keown et al in Col. 1, lines 25-55 involves first testing selected test patterns on the wafer with a test pattern and then
30 testing each die on the wafer with a wafer probe, Keown et al fail to clearly state a

step of conducting a mapping analysis according to the result of the chemical state analysis, in which this mapping analysis includes forming the defects of the die into a defect pattern and comparing the defect pattern with a predetermined pattern.

5 Since the methods disclosed by Nozoe et al and Keown et al are significantly different from the method of the present invention, applicant asserts that the two cited references cannot be combined in the manner suggested. Reconsideration of the amended claim 1 is respectfully requested. As claims 2 and 6 are dependent upon claim 1, applicant asserts that if claim 1 is found allowable, claims 2 and 6 should
10 additionally be found allowable.

 Claim 7 is also amended to overcome the above rejection. Similar to the arguments made for claim 1, the "review sequence" analysis taught by Nozoe et al in Col 18, lines 40-51 is significantly different from the "mapping analysis" stated in
15 claim 7 of the present invention. Moreover, despite Keown et al in Col. 1, lines 25-55 of the cited reference teaches a method of first testing selected test patterned on a wafer with a test pattern and then testing each die on the wafer with a wafer probe, Keown et al fail to clearly disclose a step of performing a mapping analysis after the chemical state analysis, in which the mapping analysis includes first forming the
20 defects of the die into a defect pattern and then comparing the defect pattern with a predetermined pattern.

 Since the methods disclosed by Nozoe et al and Keown et al fail to explicitly teach the mapping process of the present invention, applicant asserts that the methods
25 disclosed by the amended claim 7 is distinct from the two cited reference. Reconsideration of the amended claim 7 is respectfully requested. As claims 8-9 are dependent upon claim 7, applicant asserts that if claim 7 is found allowable, claims 8-9 should additionally be found allowable.

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Rejection of claims 3-5 under 35 U.S.C. 103(a) as being unpatentable over Nozoe et al. (US 6,777,677 B2) in view of Keown et al (US 5,286,656), further in view of Moore et al (US 6,777,674 B2).

5 Claims 3-5 are dependant upon the currently amended claim 1. Applicant asserts that if claim 1 is found allowable, claims 3-5 should additionally be found allowable as being dependant on claim 1.

10 **New Claims**

 Dependent claims 10-12 are added to describe an embodiment of the present invention. No new or additional matter was added in the above claims and the claims are fully supported in the original disclosure. Applicant kindly requests the
15 Examiner to evaluate the new claims 10-12 in consideration for their allowance.

 Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Sincerely yours,

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Date: 11/29/2007

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Interview Summary

Application No.

10/708,943

Applicant(s)

LIN, LONG-HUI

Examiner

Anthony Gutierrez

Art Unit

2857

All participants (applicant, applicant's representative, PTO personnel):

(1) Anthony Gutierrez.

(3) Ding Yu Tan.

(2) Hal Wachsmann.

(4) _____.

Date of Interview: 20 November 2007.

Type: a) ☒ Telephonic b) ☐ Video Conference
c) ☐ Personal [copy given to: 1) ☐ applicant 2) ☐ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☒ No.
If Yes, brief description: _____.

Claim(s) discussed: 1-9.

Identification of prior art discussed: Nozoe et al. (U.S. Patent No. 6,777,677 B2).

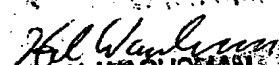

Agreement with respect to the claims f) ☐ was reached. g) ☐ was not reached. h) ☒ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: See Continuation Sheet.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

Examiner Note: You must sign this form unless it is an Attachment to a signed Office action.


HAL WACHSMANN
PRIMARY EXAMINER
10/28/07

Examiner's signature, if required

Continuation of Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: With respect to the rejection under 35 U.S.C. 112, 1st paragraph, applicant's representative addressed that he believed that one of ordinary skill in the art would understand that a wafer sample would include a single die, and thus that the claimed invention was supported by the original disclosure consistent with M.P.E.P. 2163. Examiner Wachsman addressed that a properly filed affidavit may provide additional support for Applicant's position. With respect to the prior art rejection, Applicant requested to know if based on the present search if a claim drawn to include that the three methods we performed depending on the type of defect detected, would be considered allowable over the known prior art. The Examiner indicated that if fully supported by the original disclosure that this amendment may be helpful, but that he was not sure that the amendment might not have ultimately been obvious to one of ordinary skill in the art at the time of invention. Applicant also addressed that he believed the review sequence of Nozoe et al. was not consistent with the claimed limitation of mapping. The Examiner indicated that the claims were drawn to a 'mapping analysis' and that the steps that comprised the mapping analysis were met by the review sequence of Nozoe et al. The Examiners indicated that further search and consideration would be made to any formally proposed amendment.